

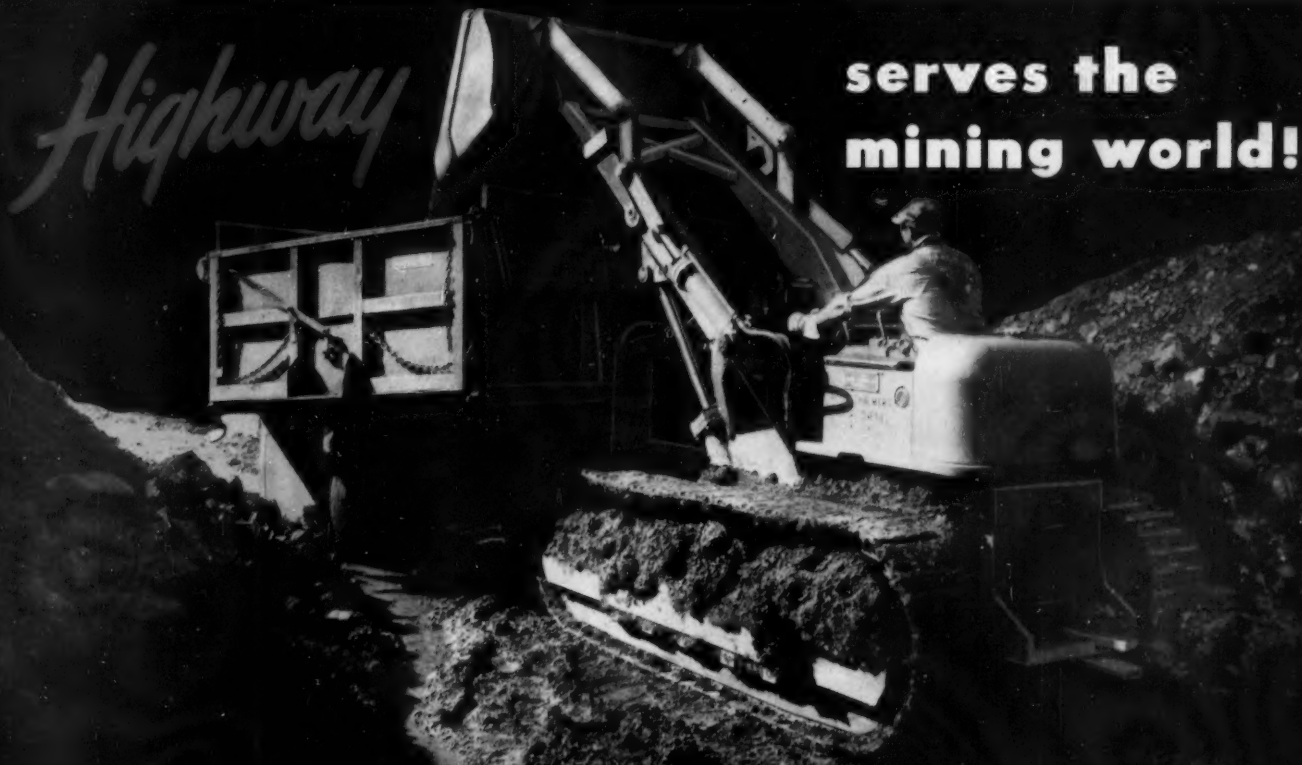
# COAL MINING

UNIVERSITY MICROFILMS  
313 N 1ST ST  
ANN ARBOR, MICH

MARCH, 1954

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4575 COUNTRY CLUB DRIVE • PITTSBURGH 27, PA.

VOLUME 31, No. 3



**serves the  
mining world!**

Allis-Chalmers HD-5 with front end shovel . . .  
LITTLE GEM CONSTRUCTION CO., East Brady.



Jaeger Pumps solve water problems at  
WEIRTON CONSTRUCTION CO., Weirton,  
West Virginia.



Lima 1201 . . .  
ALLISON ENGINEERING CO., Foxburg.



Lima Paymaster loading coal for  
HARBAUGH & KIMMEL, West Newton.

*Highway*

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ALLIS-CHALMERS • JAEGER • BAKER • GARWOOD • HOUGH  
THOR • WAYNE CRANE • GENERAL MOTORS DIESEL ENGINES  
MASTER • ERIE DMS • LIMA SHOVELS, CRANES, DRAGLINES

# WHAT FULL CONTROL MEANS

to the operator of an Allis-Chalmers TR-200 Motor Wagon



**Fast, Efficient Loading** — hydraulic steering control gets the TR-200 under the shovel fast without tiring wheel fight. Large top area permits fast loading with less spillage . . . double steel floor is reinforced with heavy oak plank to absorb loading shocks. Steering jacks and tires are fully protected from falling rock. The TR-200 carries 15 cu. yd. heaped or 18-ton loads.



**Quick, Clean Dumping** — operator controls two hydraulic jacks to dump and return bowl. Because this unit's wheelbase remains stationary, all four brakes can be set for maximum safety in bank-edge dumping. Rear end dumps far enough over embankment to eliminate rehandling material. Tapered bowl design and 70-degree tilt give quick, complete load ejection. Body may be heated to prevent load freezing.

**Safe, High-Production Hauling** — no worry when highballing a full load because four-wheel air brakes stop the TR-200 quickly even if the engine should stall. Steering pistons are equipped with stops to eliminate jackknifing. High horsepower-to-yardage ratio and large, rock-lug tires speed your operations . . . even on steep grades and in heavy going. The TR-200 travels at speeds up to 21.6 mph., delivers more loads, reduces idle shovel time.



**Plus Added Versatility** — The same 176-hp. diesel tractor unit and hydraulic controls may be used to operate an interchangeable self-loading scraper body for large scale stripping and hauling jobs.



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YOUR ALLIS-CHALMERS DEALER

**ALLIS-CHALMERS**  
TRACTOR DIVISION • MILWAUKEE 1, WIS.

# McCarthy

## COST CUTTING DRILLS BLAST HOLE DRILLS



### TRUCK-MOUNTED HORIZONTAL

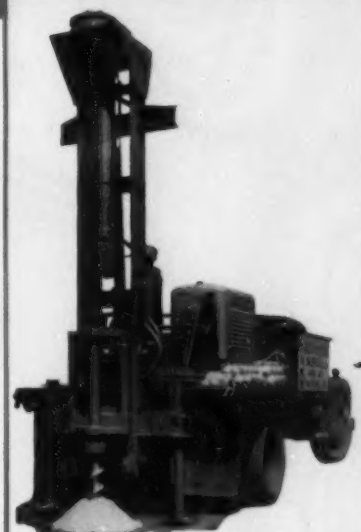
• Satisfied customer reports, "I drill so many more feet per minute with my McCarthy than I did with my old jet rig that I quickly recovered the low initial purchase cost."

### VERTICAL DRILL

• "Amazing savings," says Owner-Contractor J. F. Nichols. He drilled six-foot-deep blast holes in 40 seconds each as against 30 minutes each with wagon drills, claims savings of \$7500 per month. "Greatest purchase I ever made," says Nichols.

### SELF-PROPELLED HORIZONTAL

• A New Castle, Pa., operator reports boring "840" various depth holes through shale and sandstone, in one working day. Bores 6" and 8" diameter holes at rate of 6' per minute maximum.



**Heavy  
Rugged  
Powerful**

### COAL RECOVERY DRILL

• Robert B. Cleghorn, Jr., Hodgeville, West Virginia, reports his hydraulic, self-moving 42" McCarthy Coal Recovery Drill mines "up to 500 tons of clean, low-cost quality coal per day." Cleghorn has a three-man crew—operates in pits as narrow as 34 feet. Operator has total vision, including the highwall. Model 12 handles 24' augers from 16" to 48" in diameter.

• Other McCarthy Coal Recovery Drills handle augers 4', 6' and 12' in length.



MANUFACTURED BY

# THE SALEM TOOL CO.

SOUTH ELLSWORTH AVENUE • SALEM, OHIO, U. S. A.

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## To whip tight quarters lead mine teams Tournarocker with

To reach a new supply of ore, one of the Midwest's largest lead mining companies has just opened a new mine, driving an 825' tunnel through dolomitic limestone. Running on a 10% grade, the new tunnel is 10' high, 12' wide . . . floor is wet, soupy in spots. A 9-ton rear-dump D Tournarocker hauled away all the waste rock. This 28 mph rubber-tired unit was driven in via highway from underground ore-hauling at another of the company's mines.

Work at the tunnel was on a two-shift basis, with one shift drilling and blasting, second shift cleaning up. In just 5 hours, Tournarocker, loaded by a Rogers Ramp, consistently removed all material loosened in the pre-

vious shift. Job required only two men, one working the loader, the other operating Tournarocker.

According to the Mine Captain, at time pictures were taken, the electric-control Tournarocker was completing 1-mile round-trip cycles every 14 minutes. In addition to load time, this included backing 750 ft. down the tunnel, with half of haul up 10% adverse grades.

### Permanent underground duty

This Company has 2 other D Tournarockers assigned to permanent underground duty, hauling ore and waste rock. With power-steer and short 12'4" turning radius,



Insure your future with lowest-net-cost-per-yard LeTourneau-Westinghouse high-speed, rubber-tired tractors, self-propelled scrapers, rear and bottom-dump off-road haulers. Also save money on Carryall-Scrapers, PCU's, Roosters, Sheepfoot Rollers.

## FURNIVAL Machinery Company

PHILADELPHIA (31), Lancaster Ave. at 54th.  
HARRISBURG, 5105 Paxton Street  
NEW PHILADELPHIA, On Water Street





Tournarocker is loaded by a Rogers Ramp. Big, low-entry target makes the "D" ideal for shovel or rear-entry conveyor loading, especially in tunnels with low overhead clearance.

## of 10'x12' tunnel overhead loader

they are ideally suited to work in these restricted tunnel quarters. Big low-pressure tires give excellent traction, even on "soupy" floor or on wet, slippery haul road. There are no divided faces as on "duals" where rocks can wedge in and tear. Track problems with crawlers are eliminated. Rocky conditions at the mine would cause considerable track, link and pin breakage . . . the abrasive limestone, excessive track wear.

Mine operators are turning more and more to rear-dump Tournarockers for low-cost hauling of rock, gravel, ore, and other materials under tough conditions. Your LeTourneau-Westinghouse Distributor will be glad to show you job-proved facts and production figures on 9,



At waste dump, load slides clean. Streamlined body clears load quickly, positively. In freezing weather, body can be electrically heated to prevent load from sticking. With fingertip electric controls and power-steer, operator has instant positive control of unit at all times . . . works easily . . . is less tired at the end of the day.

Hauling to dump, Tournarocker's Tournamatic differential automatically proportions drive-wheel torque . . . gives the wheel on firmest footing up to four times more power than the slipping wheel. The "D" will "walk" right up grades that stall other haulers.



18, 35, or 50-ton Tournarockers. Better still, let him demonstrate Tournarocker at *your* mine or quarry.

*The recent purchase by Westinghouse Air Brake Company of the earthmoving and related business of R. G. LeTourneau, Inc., combines two firms which are world leaders in their respective fields. It brings together the earthmoving know-how of LeTourneau and the precision manufacturing and research experience of Westinghouse Air Brake. You can buy from this strong new company with even greater confidence than before.*

Tournarocker, Tournamatic—Trademark Reg. U.S. Pat. Off. DR-412-M

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**THIS BIT CARRYING BODY..  
FORMERLY CAST ALLOY STEEL  
NOW DROP-FORGED!**

*securely welded to chain*

**BOWDIL  
BITS**

**SET SCREW  
LOCKS BIT  
HOLDER**

**LARGE  
HEAT-TREATED  
PINS**

**RADIAL  
TRACK  
GUIDES**

**DROP-FORGED  
LINK AND  
CONNECTOR**

**INGENIOUS  
RIVET  
LOCK**

**HEAVY-WALL  
HARDENED  
BUSHING**

**MADE BY  
THE MAKERS  
OF THE ..**



**.. STRONGEST  
CUTTER BAR IN THE  
COAL INDUSTRY**

**... NOW all the wearing parts  
of the Bowdil Coal Cutter  
Chain are Drop-Forged!**

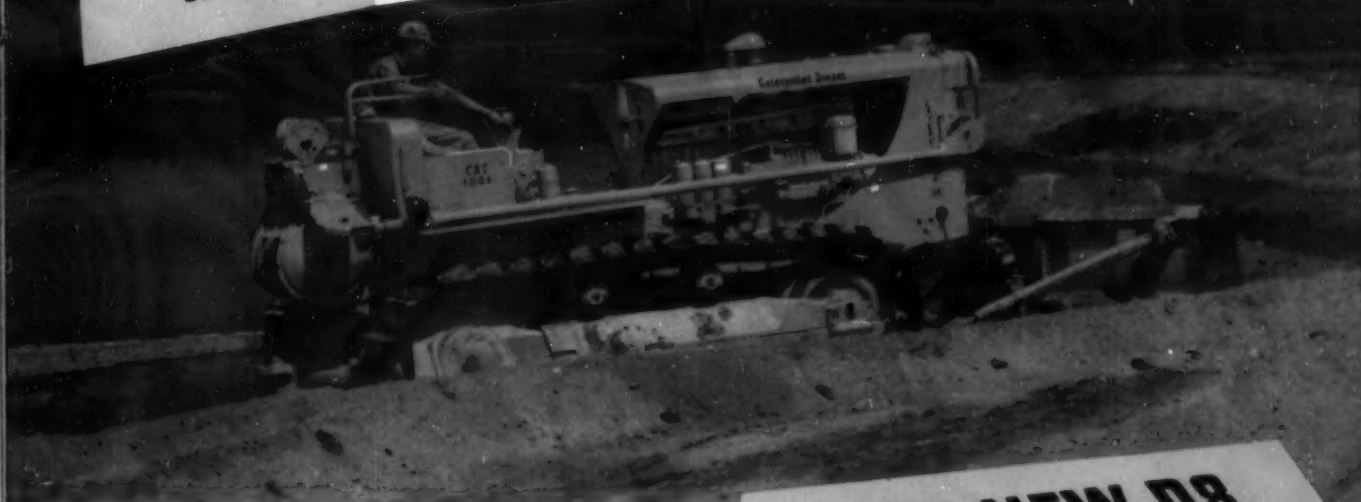
The **BOWDIL** Company  
CANTON 7, OHIO

# THE NEW Caterpillar D8 Tractor

The new Caterpillar D8 Tractor, designed and built by Caterpillar, sold and serviced by the world-wide Caterpillar Dealer organization... With 150 H P available at the drawbar, the new D8 offers new standards of track-type tractor power, production and value... Meet the new boss of the crawlers!

\*The new D8 has more drawbar horsepower, horsepower that works for you... \*The new D8 is compact, it retains the maneuverability needed in tractor applications... \*The new D8 is versatile, matched to Caterpillar-designed Bulldozers, Scrapers, Rippers and Pipe Layers... \*The new D8 is also a pusher, available attachments make this machine a powerful push tractor.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.



## THE NEW D8 Boss of the Crawlers

YOUR CATERPILLAR DEALER

## BECKWITH MACHINERY CO.

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(Formerly Statewide Equipment Co.)

1545 HANSFORD STREET, CHARLESTON, W. VA. • 4010 EMERSON AVE., ROUTE #2 PARKERSBURG, W. VA.



## **150 Drawbar Horsepower Provided by Caterpillar D8 Engine**

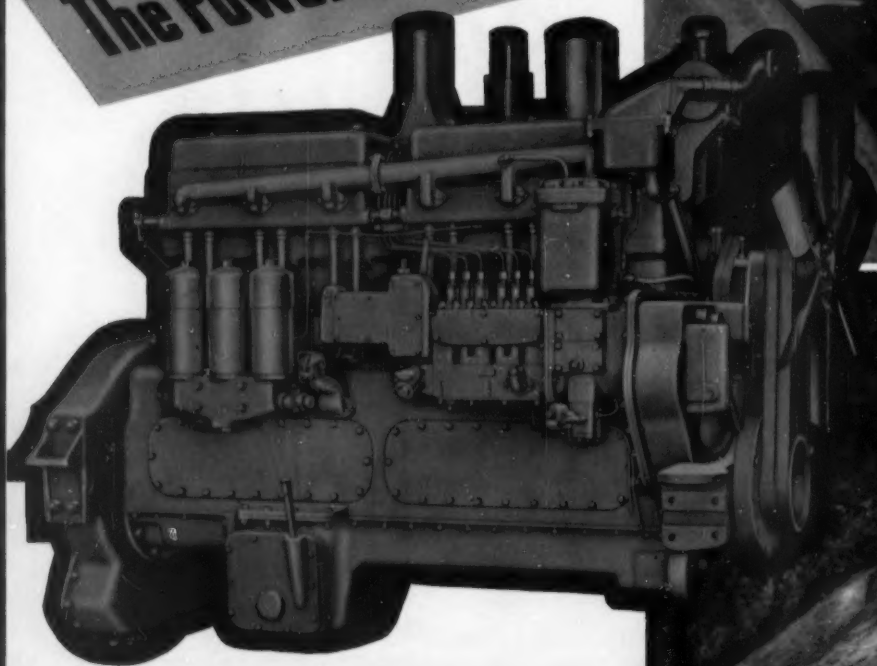
The new high performance of the Caterpillar D8 Tractor stems from the 185 HP, 1200 RPM diesel engine.

Important new features, built into the time-tested and job-proved Caterpillar design, contribute to longer engine life and decreased operating costs as well as higher power. Some of these features are: new cylinder head incorporating valve rotators and hardened valve seat inserts, new camshaft, aluminum alloy pistons with stainless steel heat plug in the high temperature zone and a cast-in iron band for the top piston ring groove. A larger oil pump driven from the front of the crankshaft has an exclusive throttling valve pressure control which assures correct lubrication for all moving parts from the first turn of the crankshaft.

This powerful engine, with these and many other advanced features, is one of the big reasons why the D8 gives you more value than ever before.



**The Powerful D8 Engine**





## Exclusive with Caterpillar Profitable to You...

Only Caterpillar offers you the long life and low maintenance cost of the oil clutch. The outstanding feature of this advanced clutch is that oil films absorb the friction and heat. The metallic friction surfaces do not come into contact until the last revolution or two before engagement. The clutch has its own lubrication system with gear-type pump and suction screen. The pump supplies oil under pressure to the hydraulic booster, which makes the clutch exceptionally easy to operate. Oil is also delivered to the inner diameter of the three clutch plates. This continual lubrication and cooling is the principal reason for much longer periods between adjustment and replacement than is possible with the conventional dry clutch. The oil clutch is another big reason why the D8 is a better buy.

## THE NEW D8 GIVES YOU...

- 150 Drawbar Horsepower
- New Long Life Engine Features
- Exclusive Oil Clutch
- Flywheel Clutch Booster
- New High-Strength Frame
- "Hi-Electro" hardened track grouser tips
- Self-energizing Steering Clutches
- New, Large Air Cleaner
- Weight 38,155 lbs. (shipping weight)
- Compact Fuel Injection Equipment
- Double Universal Joint to Protect Clutch and Transmission Bearings

# Caterpillar

REGISTERED TRADE MARK ®

**THE NEW D8  
Boss of the Crawlers**



The new Caterpillar D8 Tractor offers new highs in earthmoving production in push-tractor operations. The D8, equipped with No. 8S Bulldozer, heavy duty track roller guards, crankcase guard and tandem pusher frame, will cut your work cycles to a minimum. Fast and maneuverable, the D8 applies a full 150 HP to the job of loading your hauling units in new record times. Push-loading, singly or in tandem, is provided to meet the conditions of your job.

Your Caterpillar Dealer, with genuine Caterpillar parts, factory-trained service personnel and competent application counsel, is ready to show you the advantages of the new D8 Tractor. He can...and will...prove its power and production capabilities. Call on him for complete details. For power, production and profit, make your next tractor a new D8...boss of the crawlers.



**THE NEW D8**  
**Boss of the Crawlers**

**Caterpillar Tractor Co., Peoria, Illinois, U.S.A.**

## **BECKWITH MACHINERY CO.**

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# COAL MINING

Vol. XXXI      MARCH, 1954      No. 3

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# AUSTIN OVERSHOT LOADERS

Austin Model C-4  
on Caterpillar D4



## 1,000 uses at every mine...

There's no limit to the number of mine jobs that can be handled better and more economically—by *Austin Overshot Loaders*.

Offered as complete equipment packages, these loaders, with  $\frac{1}{4}$  to 8 cubic yard bucket capacities, are ready for easy installation on Caterpillar D2-4-6-7-8 tractors. Their exclusive "straight-in-line" loading principle often speeds up individual production tasks by as much as 50% . . . cuts costs . . . saves man-hours.

Normal Austin loading cycles require only 14 to 17 seconds. Consequently Austins load trucks and hoppers far faster than any other type of tractor loader. And—Austins are ideal for building coal stockpiles, haul road maintenance, handling drainage problems, working around shovels, salvaging coal that can't be reached by other equipment, backfilling spoil piles into coal pits, cleaning up around tipples, moving conveyors and unloaders. Frozen piles of coal do not stop Austins. They readily break through surface frost.

For further data . . . facts on what Austins can do for you, see your nearest Caterpillar dealer. Or write to Austin Division, Central Ohio Steel Products Co., Mansfield, Ohio. Ask for Bulletin L-8950.

A-8914

### KEY TO AUSTIN LOADING SPEED IS "STRAIGHT-IN-LINE" OVERHEAD PRINCIPLE

Unlike ordinary tractor loaders, the Austin simply dozes into its load, raises it in an overhead arc—and dumps it into the haulage unit.



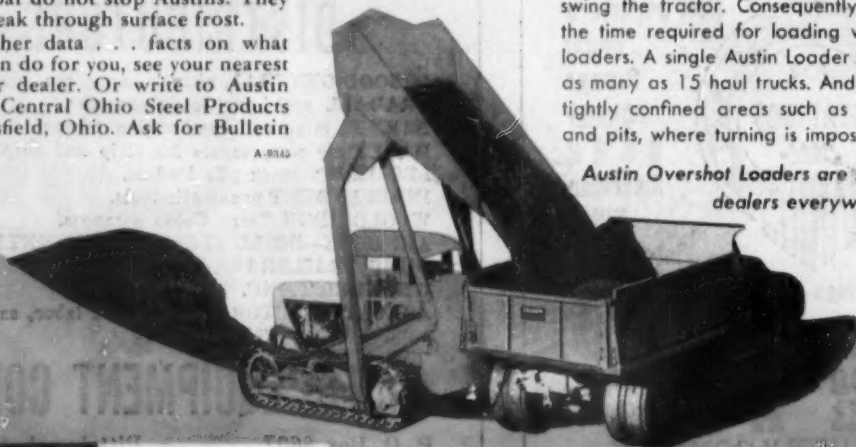
1 LOADS

2 RAISES

3 DUMPS

With the Austin, it's unnecessary to turn, block or swing the tractor. Consequently, you save 50% of the time required for loading with ordinary tractor loaders. A single Austin Loader will often keep busy as many as 15 haul trucks. And, you can operate in tightly confined areas such as underground tunnels and pits, where turning is impossible.

*Austin Overshot Loaders are sold by Caterpillar dealers everywhere*



**AUSTIN DIVISION**

**CENTRAL OHIO STEEL PRODUCTS CO.**  
DENVER, COLORADO • MANSFIELD, OHIO

*Affiliated Companies*

{ THE GALION ALLSTEEL BODY CO., Galion, Ohio  
MANSFIELD METAL PRODUCTS CO., Mansfield, Ohio

## Do You Know?

● A new operation for aching backs which gets patients out of the hospital in one week and back to work in two months may replace one in which the patient had to be in the hospital or a semi-invalid in a cast or brace for six months.

The operation was reported by Drs. Gerald G. Gill and Hugh L. White of San Francisco and Dr. John G. Manning of Pasadena, Calif., at the meeting here of the American Academy of Orthopedic Surgery.

They use it for patients with the relatively common condition called spondylolisthesis which is caused when the fifth lumbar vertebra at the base of the spine becomes displaced and slips forward, resulting in painful compression of nerve roots. The patient's first symptoms are an aching back and tenderness in the lower part of the back.

In the past, the patient had to undergo what is commonly known as a fusion operation to get relief.

In the new operation all of the bony structures pressing on the nerve roots and ligaments are removed. It is particularly useful in those patients who have been considered too old for the fusion type of treatment.

"While the length of time of follow-up in our patients has been relatively short, the longest case being three and one-half years, the results thus far have been most encouraging," the doctors said. "From the standpoint of the patient and, particularly, from the saving of his time and expense, there is a great difference when comparing the two methods of treatment."

● Grady P. Baze of Idalou, Tex., patented a plastic tractor cab which gives excellent weather protection and visibility to the driver. The cab is made of a plastic like Plexiglas.

The cab is in two sections so that the front section can be moved forward on tracks for the driver to enter and leave. The cab has a rear window and two side ports in the front section for ventilation.

Due to its lightness and simplicity, Mr. Baze states that the cab can be easily installed on a tractor. His invention received patent No. 2,667,379.

● A device that beams into a room sounds too high to be heard has been invented to give fire, burglar and damage warnings. Samuel M. Bagno of Astoria, N. Y., who assigned his patent, No. 2,655,645, to the Alertronic Corp. of New York, states that his invention detects any motion in a closed room. When fire breaks out, or if window panes are broken, the movement of air in the room is sufficient to trip the sensitive electronic device. Prowlers who run afoul of the silent sound waves also trigger the alarm.

● Experimental kit in electricity provides 190 experiments that children and science teachers can perform without danger. It demonstrates the basic principles of direct and alternating currents, and reveals in its 240-page manual how to build and operate six different types of motors. "This kit," the maker says, "is a real instruction tool."

## Here and There in the Coal Industry

● The Clyde E. Speer Coal Corporation is celebrating the 30th anniversary of its founding this year. Established in Pittsburgh in 1924, the firm now has offices in Cleveland and Buffalo. Since its founding, the company has specialized in serving the bulk coal requirements of steel mills, utilities, railroads and ship lines in northeastern United States.



Clyde E. Speer

The history of the company is largely a family and personal history of Clyde E. Speer, the man who founded the firm and has served as its president and chief operating official ever since.

● "Stiffler Industrial Lubricants Company has announced its new association with American Lubricants, Inc., Buffalo, New York.

Stiffler Industrial Lubricants Company, for thirty-eight years a leading industrial supplier, has always endeavored to serve with the highest technical skill, keeping abreast of the latest requirements in the industrial field. American Lubricants, Inc., of Buffalo, New York, independent wholesale manufacturer of industrial lubricants, has for thirty years supplied products on a wholesale level. With leading chemists and laboratory facilities, a fine plant geared for production with the latest grease manufacturing equipment, American Lubricants, Inc., combined with a leading marketer such as the Stiffler Industrial Lubricants Company is without a doubt a team unparalleled in the petroleum lubricating market anywhere.

Mr. Torrence F. Stiffler, President of the Stiffler Industrial Lubricants Company and Mr. H. R.

Katzman, President of American Lubricants Company, Inc., both are surrounded by a team of co-workers—technical, sales, and business staff—which is an experienced combination of talents that can hardly be surpassed.



Torrence Stiffler

Stiffler Industrial Lubricants Company is a high-quality specialty house which has served the national industrial market diligently and faithfully for many years, and is particularly well-known in the Pittsburgh area. Quality control of these productions has been for years very thoroughly developed; incoming raw material is policed very carefully, and the finished products are constantly subjected to time checks and studied in action in the many industrial applications. The design of products, backed by thorough knowledge in industry, brings a custom-made product for any type of industrial lubrication problem and serves as a real accomplishment of an excellent team which we are pleased to announce."

● Tri-County Fuel Company announces the purchase of the Manor Coal Company, located at Bruin, Pennsylvania, on the Baltimore and Ohio railroads.

Effective March 1, 1954, this operation will be known as the Manor Mine and production will be resumed with a greatly increased tonnage.

Andrew W. Nellie, Vice President, Sales



# JEFFREY continues



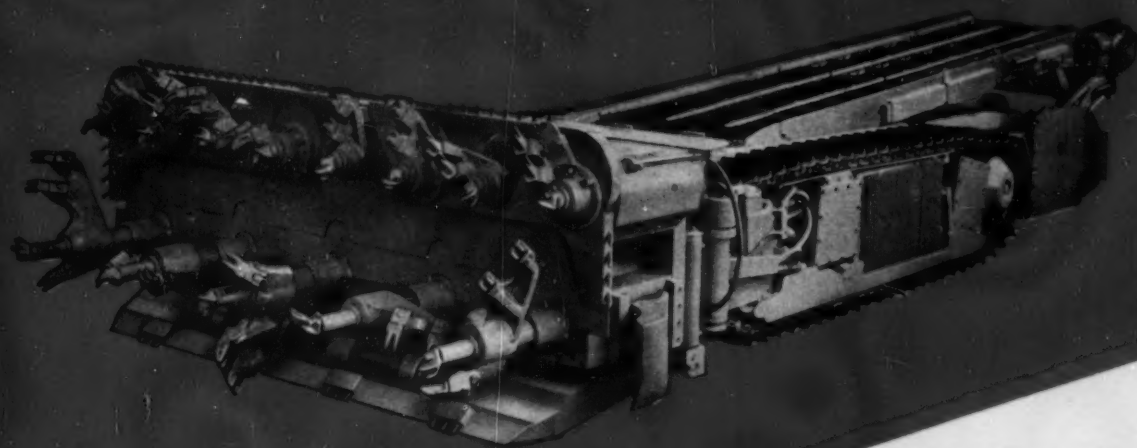
## MINES AND LOADS IN ONE

Top photo—a No. 76-A COLMOL mining by the popular "offset cut" method. An entry approximately 16-feet wide can be driven in two passes of the unit. Cutting range from 38" to full height of seam. A low-type unit is shown at right—above.

In oval—coal travels back on discharge conveyor at the rate of from two to four tons per minute. Coal is generally discharged into shuttle cars for transportation to a belt conveyor or mine cars.

**POWERFUL  
RUGGED  
COMPACT  
FAST**

# to modernize coal mining



## THE COLMOL

### OPERATION WITHOUT USE OF EXPLOSIVES

This safe, rapid method of mining large quantities of coal has introduced a new conception of modern mining . . . has become an important contribution to the industry. With a single unit, coal is mined and loaded without the use of explosives. The COLMOL has eliminated the necessity for separate drilling, cut-

ting and loading equipment. Production from this machine will run from 40 to 80 tons per man shift depending upon the height of coal.

Information on the COLMOL—what it is, how it is built, how it works, what it can do—will be sent on request.



**THE JEFFREY MANUFACTURING CO.**  
ESTABLISHED 1877  
Columbus 16, Ohio

**IF IT'S MINED, PROCESSED OR MOVED  
...IT'S A JOB FOR JEFFREY!**

*sales offices and distributors  
in principal cities*

**PLANTS IN CANADA, ENGLAND, SOUTH AFRICA.**



## THE STACKER SYSTEM OF REFUSE DISPOSAL

By HERBERT E. STEINMAN

Plant Engineer, Jones & Laughlin Steel Corp., California, Pa.

The purpose of this paper is to acquaint the operators and engineers of the Pittsburgh District with the stacking system of refuse disposal.

At the outset of the design of the Vesta Plant, these factors were present: First, the disposal site would be approximately one mile away from the loading point and at an elevation of 247 feet above the ground level of the plant. Second, the disposal tonnage requirements, due to full seam mining, would be 9,000 tons per day. Operating 14 hours per day, this would necessarily make the desirable disposal capacity approximately 750 tons per hour.

Several schemes were investigated to determine the most economical means of material handling, namely:

1. Continuous aerial trams 6,000 feet from the plant site to the point of disposal, utilizing shuttle trams at the disposal area.

2. A continuous belt conveyor for 6,000 feet, with trucks or aerial trams to distribute refuse at the dump site.

3. Building a roadway approximately one mile long to the dump site, for all truck disposal.

4. Continuous belt conveyors from the plant site to the disposal area, and a stacking system.

The stacking system was chosen because it presented as a combine the smallest capital investment and the lowest anticipated operating cost.

Since I believe we have the only stacking application in the Tri-State area, I will familiarize you with the stacking system and its

operation. A stacking system is a method of material storing employing the use of belt conveyors, some portable and some stationary. The portable belts work together to distribute material in long projections, the equipment operating on top of the stored material. The system will vary in number of belts required, center to center of terminal pulleys, and will vary in lift as the dump progresses. The number of belts will be governed by the distance and area to be traversed from the permanent loading point to the discharge point.

The stacking conveyor, as shown on Slide No. 1, consists of a stacker boom, cantilevered to permit discharge over the end of an advancing pile and pivoted at its loading point, permitting an 180 degree sweep of the boom. The means





of propulsion is provided by a pair of powered cats supporting the boom at approximately its midpoint. The operator's cab is located over these cats. The distance from the swivel point to the discharge point is 171 feet; the vertical lift is 31 feet 7 inches. The drive motor with special provisions for quiet operation, since it is in the operator's cab. The boom is retained in a level position by the use of a universal joint at its pivot point, and may tilt as high as 10 degrees. If this is exceeded, power is shut off of the drive.

Behind the boom conveyor is a conveyor referred to as a "trailing" conveyor. This conveyor is also provided with a means of propulsion by cats mounted under the conveyor drive housing, and will advance with the stacker boom in small increments as the boom pivots about the dump point, discharging the material in a semi-circular path ahead.

As the trailing conveyor advances, it pulls along its conveyor sections and tail pulley, which are mounted on wheels and run on rails.

After the conveyor has advanced 200 feet, the tail pulley is cut loose and returned to its original starting position. New conveyor sections, fabricated in 20 foot increments, are added between the tail pulley and the conveyors, and a new section of belt 400 feet long is installed, utilizing mechanical splices. The equipment is then ready for another 200 foot advance. Splices must be inspected frequently during operations. The 200 foot sections for the trailing conveyor advancing can be added in one shift.

The trailing conveyor sections are provided with corrugated sheet metal covers, to which are attached canvas curtains that extend down to the ground. These prevent wind from lifting the belt off the idlers and provide protection against freezing in the winter months.

The transfer hopper, through which materials are loaded, remains stationary, and is arranged to continuously handle materials while the trailing conveyor is advancing or retreating. The stacker can also store material on its retreat, reversing the propulsion procedure as described above.

All propelling cats are separately driven by 15 HP gear motors at speeds from 12 to 15 feet per minute. Steering is accomplished

by modifying the speed of the individual cats. The cats driving the trailing conveyor can be turned 10 degrees, providing the equipment with great mobility when it is necessary to relocate.

The drives for all of the long conveyors are standardized and are of the tandem type, with one 125 HP wound rotor motor and one 30 HP wound rotor motor driving separate pulleys to equal speed at full load. Since the belts are tensioned near their critical point, power is applied first to the 30 HP motor, allowing the belt to pick up speed before the 125 HP motor cuts in. All motors are provided with thruster brakes to prevent backspin when power is off. All belts are provided with gravity takeups.

The trailing conveyor drive is retained in a level position by means of a hydraulic leveling device. The conveyors work together as a unit to produce a pile up to 370 feet wide on any grade from 0 to 10%.

The total projected length of the trailing conveyor is limited in one direction by the drive horse power. When maximum power requirements are approached, the stacker may retreat or be relocated. Relocation is accomplished by disconnecting the trailing drive unit (here) and moving the boom with it to the desired location. This move can be accomplished in two days.

Depending on the application and projection, another portable conveyor, referred to as a "dump" conveyor, may have to be provided to transfer material from the permanent discharge point to the trailing conveyor. This conveyor need not have powered cats as a means of propulsion, as it will remain stationary over long periods of time and needs only to be supplied with skids under the drive-housing. Its length may be varied by installing the same 20 foot sections used to extend the trailing conveyor between the terminal pulleys.

Drive, belt speed, and width of all belts will, of course, depend on the application. Our system is designed to handle a maximum capacity of 750 tons per hour; belt width is 36 inches, made of 6 ply 42 ounce duck, and speed is 480 feet per minute.

The method of storing the material will vary with the material handled and also with the ground

being traversed. Slide No. 2 shows a tentative disposal plan of our system. You can see the permanent dump point. This is the terminal of two permanent conveyors carrying the material away from the plant refuse silo. Line S1-B was our first projection. Here we advanced approximately 1,000 feet from the dump point on a 10% grade. We retreated on this pile, storing in all a total of 1,500,000 tons of material. Then the stacker and trailing conveyor were relocated to line S1-C. Here we advanced 1,000 feet on a 10% grade, but did not store any material on the retreat. This was necessary due to the natural slope of the terrain from line S1-B to line S1-C, and also to the fact that the top of the two piles would have to be level to provide a launching site for moves S1-D, S1-E, and S1-F. We are now progressing along line S1-F and expect to advance as far as 3300 feet beyond the dump point and store 5,000,000 tons of material on this one move. In all, we expect to store 38,000,000 tons of material over a period of thirty-five years.

Slide No. 3 shows the overall plant and refuse site. Here are two 1200-ton refuse silos, the two permanent belt conveyors totaling 2300 feet in length, and the first pass of the refuse pile.

Slide No. 4 shows the stacker on retreat. Notice the self-propelled drive on the trailing conveyor. Here is a portable transformer reducing the voltage from 4160 volts to 460 volts, and 600 feet of flexible cable to follow and provide power to the drive units.

Slide No. 5 shows the stacker boom itself on retreat. Here are the powered cats that drive the boom in a semi-circular path while piling up the refuse 25 feet high. Here is the operator's cab, where the controls for all of the units are located.

Necessary operating labor per shift:

- 1 Stacker Operator
- 2 Conveyormen
- 1 Crusher Operator
- 2 Repairmen
- 1 Dozer Operator

Operating and maintenance labor amounts to two cents per ton of material handled. The cost per ton, including amortization of equipment, taxes, power, and supplies,

(Continued on Page 20)

## PITTSBURGH COAL MINING INSTITUTE MEETS AT CALIFORNIA, PENNSYLVANIA

● The Pittsburgh Coal Mining Institute held one of its regular meetings at the Steel Auditorium, State Teachers College, California, Pennsylvania. The meeting was conducted under the supervision of Mr. Charles H. Curry, State Mine Inspector and President of the Institute.

The program consisted of two papers. One about the Jeffrey Stacker at the LaBelle Preparation plant of the Jones and Laughlin Steel Corp., by John Riley, Supt., of the preparation plant. The other paper was entitled Value of Roof Bolting in Difficult Conditions, by F. J. Carroll, asst. Supt., Robena Mine, U. S. Steel Corp. Discussion of Mr. Carroll's paper was by W. R. Cunningham, State Mine Inspector. Mr. Carroll's paper on roof bolting follows.



F. J. Carroll, Asst. Supt., Robena Mine, U. S. Steel Corp., reading his paper, Value of Roof Bolting Under Difficult Conditions. Sitting on right is Charles H. Curry, President of the Institute.

We have had several years' experience with roof bolting in our Robena Mine. As some of you know, this is a very large mine and a completely mechanized mine. We are in the Pittsburgh seam. Although most of my remarks are based on our experience at this particular mine, the size of the operation and the variety of the conditions encountered will provide a broad base from which certain general conclusions can be drawn. I have spent a great deal of my time the last five years studying this technique for roof control and offer these remarks from this experience.



Left: Andy Kalasky, assistant Forman, Jack Stephenson, Supt., Albert Hood, Pro. Eng., Maurice Fowler, Safety Eng. All of the Warwick Mine, Duquesne Light Co.

In presenting this paper, I am not going to attempt to overwhelm you with a mass of figures that would probably not apply to your operation, but rather, I will make points in general that may have some application to your operation.

Safety is the first consideration in mining and in this respect we have found by practical experience that roof bolting offers significant opportunities. To date our accident record, due to roof falls, has shown a definite improvement in those sections using roof bolting.

This improvement is borne out statistically in that we have roof bolted over 125 miles of entry in development in which there has not occurred an accident, lost time or otherwise, from a fall of roof. It should be further pointed out that it is our practice to roof bolt in worst roof conditions.

Roof bolting promotes safety in several ways. Where roof bolting is used, the protection can be placed much closer to the face than with conventional supports. To be able to prepare a place for cutting, using



Left: W. Dan Walker, H. R. Burdelsky, S. P. Polack, J. W. Holcomb, G. W. Chastain, all of the Bureau of Mines, Pittsburgh.





Left: Geo. Kaballa and Geo. Frush, assistant Foremen, J. and L. Number Five Mine, Vestaburg. Frank Pocus and A. S. Kelly, assistant Foremen, Jamison 21 Mine.

14 feet round timber, it is desirable to set the timber approximately  $4\frac{1}{2}$  feet from the face. If the timbering is placed closer to the face, it interferes with precision cutting when top cutting practices are employed. This means then, there are  $4\frac{1}{2}$  feet of exposed roof for which the shotfirer, driller and other facemen must provide protection by a safety post or jack. A safety post does not provide the same protection offered by a row of roof bolts properly installed. With roof bolting it is customary to place the last row of plates not farther than 30 inches from the face and if conditions warrant, they may be placed against the face, providing permanent roof protection right at the face.

This type of protection is particularly advantageous when loading is done with machines that have controls 10 or 11 feet from the gathering arms. Using conventional timber  $4\frac{1}{2}$  feet from the face to clean up an  $8\frac{1}{2}$  foot cut, the operator cannot load the entire cut without interruption to install a safety jack or post. Otherwise the operator would be working ahead of any roof support. With the roof bolted a maximum of 30 inches from the face, it is possible to clean up an  $8\frac{1}{2}$  foot cut without going beyond the permanent roof support. In other words, in the face preparation, roof bolting minimizes the unsupported roof exposure and facilitates the work for the cutter.



Left, back row: N. Kerr, George Cormack, Frank Cormack, Robert Whalen, all Foremen; Front row: John Pringle, Electrical Inspector, J. F. Fallenberger, senior Asst. Foreman, Alex Baker, Asst. Foreman, all from the Crucible Fuel Co.

Roof bolts cannot be dislodged by machinery hitting them as in the case with conventional timbers. This is especially true when posts are used. Even when cross bars are put in hitches there is the possibility of the cross bar being knocked out by machinery such as the conveyors of the loader or the cutter bar.

In locations where roof bolting is not being done, there has been developed the practice of bolting bars and beams to the roof with saddles. This removes the danger of machinery knocking out logs and permitting an intersection to collapse. There have been a number of occurrences since this practice went into effect where the posts were knocked out, but in every case, the roof bolting held and there was no fall.

It should be mentioned that there have been falls of roof in roof bolted areas. In some locations the falls have occurred while using the maximum roof bolting plus a maximum of conventional timbering. Some of the falls in roof bolted areas have been witnessed by either foremen or working personnel. In no instance observed has a fall occurred instantly. In every case, without exception, there were very definite indications that the area was about to fall. These indications were, in all cases, as good as those given by conventional timbers and in many instances, much better. The first indication of a potential roof failure is cutting along a rib. When cutting has occurred along both ribs, then it is time to use conventional support to reinforce the roof bolts. In addition to the cutting along the ribs, a definite bow occurs in the roof across the entry. In some instances there has been a definite sound of the anchorage being pulled out of the hole. In a few cases a humming sound, indicating extreme tension on the bolts, has been heard. Some of the falls occurred at locations where signs of weight were noticed several days in advance. In such locations it is customary to place conventional timbers as additional support. The important thing is, that bolted roof does provide warning of failures and we believe this warning is as good as, if not better than, the warning provided by conventional cross-bars and posts.

Another factor of safety introduced by roof bolting, often over-

looked, is the great reduction in the amount of heavy lifting required. The heaviest item that has to be handled in roof bolting is the stope hammer weighing 80 pounds or less. The bolt assembly and even the channel is only a matter of 15 or 20 pounds, whereas with conventional timbering it is necessary to have two or more men working together to balance a timber on a jack before installing it, and in the case of a beam, more men may be required. Should any one of these men slip or stumble, then all the men are in jeopardy.

Roof bolting, in addition to the advantages previously enumerated, actually gives us a practical opportunity to provide roof control even before the cut is completed or the coal is removed. Of course, this is only necessary to control an abnormally bad roof condition. In these extremely bad conditions, it is sometimes advantageous to support the roof before the supporting coal is removed. This control can be gained in one of two ways: The first method is to place the bearing surface, either plate or channel, directly at the face and angle the bolt over the unmined coal. This has the tendency to compress the poor roof before it is actually exposed. The other way is to cut a manhole in the face and then go in and place the bolts before the full cut is made.

We have developed a new method of mining, utilizing continuous miners and roof bolting, affording an opportunity for roof control which cannot be approached using conventional mining machines and wood timbers. It is recognized that the sooner supports are placed after the coal is mined, the better is the opportunity to control the roof. When conventional mining machines are used, it is a matter of several hours between the time the place is cut until it is ready to be timbered. With the method now in use at Robena, the roof may be supported in a matter of minutes after it is exposed. When a cut is made in a development place there is usually exposed an area of at least 144 square feet, whereas, with our method, this is reduced to one-third or less. It follows from this statement that our new method using continuous miners and roof bolting is the best present approach to more absolute control of roof.

So much for safety which, as our first consideration, is reason alone

for promoting the use of roof bolting wherever feasible.

Next, your attention is invited to some of the practical economies we have gained through the use of roof bolts.



W. R. Cunningham, State Mine Inspector, discussing Mr. Carroll's paper.

The worse the natural conditions, the greater the benefits that can be derived from roof bolting. One extreme is the condition where good roof is encountered and the entries can be driven with no roof support. One might assume it would not be economical to roof bolt. However, let us look into this condition further. Even in locations of good roof it is reasonable to assume that some roof protection would be desirable in airways that have a long life and particularly in main haulage roads. This is especially true when operating in a seam where the roof strata will vary, in a distance of a few feet, from a good self-supporting sand rock to a soft, wet, shaley strata. The roof strata may also contain many hidden slips and faults. Under these conditions it becomes economical and advisable to provide a permanent form of roof protection, in all entries which must remain usable for a number of years. In air ways this permanent protection may be either treated cross-bars placed with the initial mining or where conditions warrant the

coal may be mined without timber and then followed up with treated center posts. In either case, it is economical to use roof bolts with the initial mining, thereby, providing protection while mining the coal and also providing permanent roof support. We know that roof control on haulage is more economical when roof bolts are used instead of conventional timbers. The practice prior to roof bolting was to use green timber for protection while mining the coal, then follow up with permanent roof protection consisting of a 14 foot or 16 foot, 5 inch x 5 inch, "T" beam placed in hitches in the rib on 7 foot centers, with 5 or 6, 3 inch x 8 inch x 8 feet treated plank for lagging. With the introduction of roof bolting only the beams are necessary. With more experience at a later date, it may be found that the beam centers may be lengthened. The measurement of cost savings in the work is not readily determinable. Our experience suggests that the substantial savings lie primarily in the greater security and permanence of the haulageway and not merely in installation costs.

Roof bolting facilitates more rapid advance in main haulage work. Primary reason for this difference in speed lies in the fact that with roof bolting there are practically no falls to clean up and re-timber, whereas, with conventional timber there have been instances of continuous roof falls for hundreds of feet, as high as 27 feet above the bottom at intersections. These comparisons have occurred in adjacent areas and as far as could be determined, the roof strata was the same.

Once roof bolting has been introduced, other benefits than just roof



Left: Geo. Lannon, Ed Seese, J. S. Whittaker, W. L. Kelly, all of the Pittsburgh Coal Co., and Tom Parks, Jones and Laughlin Steel Corp.



control can be derived. We have found that it is possible to drive wider entries and still control the roof. This means increased tonnage and lower cost for any given conditions. Wider entries and the fact that crossbars and posts are removed introduces another saving which, though very real, is difficult to show in cents per ton reduction in cost at the present time. I am referring to savings in ventilation costs. The removal of the timbers and legs eliminates obstructions that increase the rubbing surface, reduce the area, and create turbulence, all of which increase the water gauge needed to circulate the air. In addition, there are fewer falls to obstruct the airways in later years.

It has been found that with only a limited number of roof bolting units in those areas having the worst natural conditions. This holds true in entries where roof bolting alone cannot control the roof and conventional timbers are used in conjunction with roof bolting.

There are certain natural roof conditions that roof bolting will not control. There has been found roof strata that is wet and soft, in which it has not been possible to properly anchor a rod. This, of course, is a limitation on the use of roof bolts. Roof of this character would probably present special problems with conventional timbering also. Nevertheless, it must be acknowledged that roof bolts are adaptable for use only where some anchorage can be obtained. On the other hand, there are many instances where roof bolts will control a roof that conventional timbering cannot satisfactorily control. As an illustration, the drawslate commonly found above the Pittsburgh seam must often be taken down with the mining of the coal. We know of mines where a safe roof can be obtained by bolting the slate to the sand rock above but with conventional timbering there is no choice but to take the drawslate down.

Roof bolting in its superior control of the roof has made possible new methods of mining that previously were not feasible. The first, not actually a new method but an improvement, is simply driving rooms, entries, and other working places wider, thereby increasing the tonnage per working place with very little additional expense. In open end mining systems it appears

likely that it will be possible to effectively drive the open ends 33 feet wide instead of 25 feet, this being accomplished by driving the conventional open end 25 feet wide and then taking a slab along the solid rib 8 feet wide. This is not feasible when using conventional timber because the wooden props would have to be reset in cutting the slab.

Furthermore, when roof bolting in the open end, it is the practice to carry two rows of posts on four foot centers and eliminate the conventional two bars to the 8 foot cut. Removal of the supporting four legs makes it possible to clean up all the coal in the cut much easier. With the legs under the crossbars there is an appreciable percentage of the coal prepared that cannot be loaded with the machine and it is either lost or must be shoveled by hand to where it can be loaded.

We have pointed out that when drawslate comes down when conventional timbering is used, roof bolting can hold the slate and prevent it from falling and mixing with the coal. In addition to providing a cleaner coal, it is possible to provide a more efficient operating cycle. When it is necessary to send a loader twice into each place, once to clean up the fallen drawslate, and then to load the coal, there is imposed a bottleneck that limits the production of the section. Roof bolting eliminates the bottleneck. In entry development the same is true except to a lesser degree. In mines having a poor roof strata the control of this roof has introduced savings and improved the market value of the coal by the reduction of ash. The roof bolts

hold up a great percentage of the roof strata that it is not possible to hold up with conventional timber, thereby removing a source of ash.

No picture of roof bolting would be complete without discussing it in conjunction with continuous miner. It is hard to visualize continuous miner operations at or near the present efficiencies, in seams requiring roof support, if wooden timbers had to be set. The problem begins at the loading station. The shuttle car operator instead of putting six roof bolts on the buggy would, with the help of one or more men, have to put on two 14 foot or 16 foot crossbars, and 4 or more 7 foot posts. When he arrives at the machine, instead of standing the six bolts along the rib, he must unload and place the wood in the clear. Having the material at the face there is the work involved of installation. With roof bolting this is relatively simple. While the machine is operating on one side of the heading, bolts are being installed on the other, and can be installed as near the face as necessary, directly against the face if desired. When one side is advanced, the machine can move to the bolted side and the area mined can be bolted. Keep in mind, one man can do all this with possibly an occasional assist from the shuttle car operator. The heaviest item he must lift would be an 80 pound or less stope hammer. Now, how would the wooden support be placed? The operator of the machine must pull his machine back and the timberman, the shuttle car operator, and the machine man place the timber on a timber jack, measure for the legs, cut them, place them,

(Continued on Page 21)



C. C. Virgin, Supt., Indianola Mine, J. H. Reitz, Manager Mines, J. M. Krese, Supt. Mech. Mining, H. Cook, Assistant Mine Foreman. All of the Republic Steel Corp.





Left: Geo. Steinheiser, State Mine Inspector; Rev. Edwin C. Houk, Minister from Uniontown; Geo. S. Struble, State Mine Inspector; James McKnight, Ed W. Wilkinsons son-in-law Robert L. and Ed C. Wilkinson, sons of Ed.



Left: John Sembower, Mayor of Uniontown; J. A. Boyle, Chief Inspector, U. S. Steel Corp.; W. Garfield Thomas, Deputy Secretary of Mines for Pennsylvania; G. N. McLellan, Supt., Weirton Coal Co.; Geo. S. McCaa, State Mine Inspector.

## TESTIMONIAL DINNER IN HONOR OF E. W. WILKINSON, STATE MINE INSPECTOR

*White Swan Hotel, Uniontown, Pa., Saturday, March 6, 1954*

Remarks by

**KARL L. KONNERTH**

Vice President, Operations—Coal  
United States Steel Corporation

We are here to pay tribute to a really big man this evening—big in stature, big in heart, and big in achievement. This spontaneous, enthusiastic gathering of his friends certainly demonstrates the high esteem in which Ed Wilkinson is held by the people here in the Uniontown district. And I am extremely happy to be a part of this group.

By the way, I wonder how many of you realize that this is really more than just a testimonial dinner for Ed—it's also probably the big-



Karl L. Konnerth presenting his paper.

gest birthday party he ever had in his life. Last Tuesday was Ed's seventy-third birthday (if my arithmetic is right) and it seems to me that this is just about the nicest way that it could have been observed.

There's an old song that says, "A policeman's lot is not a happy one," but Ed has never seemed to mind being a law-enforcement man. His job has not been easy, but Ed has the happy faculty of being able to give constructive, helpful criticism without arousing resentment. In our Frick District mines, for instance, I know that he has made us toe the line so well that he often persuaded us to do things even better than we would have needed.

### SOME INTERESTING FACTS CONCERNING EDWARD W. WILKINSON

Edward W. Wilkinson's early mining experience began at the age of 12 years when he entered the mines of the Morris Run Coal Company in Tioga County, Pennsylvania, with his father as a "half-turn" helper, a job since raised to the more dignified position of apprentice miner. He served in the capacity of pick miner, trapper and driver until the year 1903, at which time he moved to Uniontown, Fayette County, Pennsylvania, and accepted a position as motorman and electrical repairman with Bessemer Coal and Coke Company at Martin, Pennsylvania.

In 1907 he sat for and successfully passed the fire boss examination and was elevated to the position of night fire boss. Later in the same year he was promoted to the position of superintendent, filling that position until 1909. During that year he successfully passed the first grade mine foreman's examination and he accepted a position as fire boss with the H. C. Frick Coke Company in the

Edenborn mine. With the exception of a short interval when he again served as superintendent for the Bessemer Coal and Coke Company, his entire official career from fire boss to superintendent during the years 1909 to the time of his appointment as state mine inspector, was with the H. C. Frick Coke Company.

He sat for and successfully passed the State mine inspector's examination in 1921, and 1929. On May 1, 1927 he was appointed state mine inspector, Bituminous Division, Pennsylvania Department of Mines, by the Honorable John S. Fisher, then Governor of the Commonwealth.

He was first assigned to the 23rd Bituminous Inspection District with headquarters at Masontown, Fayette County, Pa. In 1941 he was transferred to the 5th Bituminous District, with headquarters at Uniontown, where he has since resided. He retired March 1, 1954, after 26 years and 10 months of continuous service as a state mine inspector.

Mr. Wilkinson has always taken a keen interest and active lead in accident pre-

vention, and the promotion of safety and first aid work. For the past several years he has been president of the Southwestern Pennsylvania Safety Association, and under his leadership the interest in first aid work and first aid contests has increased each year. He is a member and past president of the Mine Inspectors Advisory Association, and a member of the Mine Inspectors Institute of America, the Coal Mining Institute of America, and the National Mine Rescue Association. Fraternally, he is affiliated with most all the Masonic bodies. He has for many years been a member of the Third Presbyterian Church of Uniontown, and has served many years, and is still serving on the Board of Ruling Elders of the church.

He received his education in the public schools at Morris Run, Pa., and graduated from the Commercial Department of Madison Academy in Uniontown, Pa. Later he studied electrical and mining courses with the International Correspondence School of Scranton, Pennsylvania.



Jack McKenna, Asst. Chief, Penna. Dept. Mines, addressing the guests.

What's more, he made us like it—and that's a real achievement.

We're going to miss having Ed around in the mines, because his fairness, his diplomacy, his sound knowledge of his job, and his un-failing knack for saying nice things about people have made him one of the most capable and most popular men with whom we've ever had the pleasure of working.

Even those of us who didn't see Ed very often are going to miss him, because we knew that we could always rely upon his practical suggestions. If he objected to the way we were doing things, we knew it was because there was a real hazard involved, and not just because Ed was the Inspector and thought he had to throw his weight around a little.

I think it was John Tippen, our retired mine foreman from Ronco—most of you know Tippy—who was talking about Ed's approach to his job as a State Mine Inspector. Tippy said, "Ed Wilkinson always just talked to you like a son. He never missed anything that needed

to be corrected, but he always gave you every opportunity to make it right. I used to look forward to having Ed inspect the mine."

As a matter of fact, Tippy could probably be considered something of an expert on the way Ed Wilkinson worked around the mines. You see, before Ed became an Inspector, he worked for Frick, first at Edenborn, then at Collier, then at Ronco, and finally at Phillips mine. And at the time Ed left Phillips to become a State Inspector, Tippy took over his job as mine foreman.

"That was the hardest assignment I ever had," Tippy says now. "Trying to follow Ed Wilkinson is a real tough job. He knew every man in the mine and had the loyalty and respect of every one of them. Ed was always tolerant and extremely fair. He appreciated the value of just ordinary work, and made a point of letting the men know it. He had just as much—or more—praise for the man who did a good job day in and day out as he did for the fireball who showed up real good sometimes and was just average the rest of the time. Yes, sir, Ed Wilkinson certainly made it tough for the guy who came after him!"

There are a lot of stories floating around about the days when Ed worked at Frick. Walter Koontz, Superintendent of our Kyle Mine, recalled one of his favorites the other day. All of you know that Ed's the kind of fellow who avoids discussions of controversial subjects, like politics, any time he can. But Walter likes to remember the day that Ed persuaded a dyed-in-the-wool Democrat to become a Republican. Seems as though it happened this way:

Back around 1921, when Wilkinson was foreman at Phillips, work



Jack Boyle, Safety Director at the Robena Mine presented Ed Wilkinson with a large television set and easy chair.

was pretty slack—so slack, in fact, that only the flue ovens were operating to make steam for power. So, late one afternoon, some of the assistant foremen—Joe Korona, Phil Callaghan, Walter Koontz, and the late Frank Kane—got to talking politics. There was a red-hot county election coming up shortly and, since Frank was the only Democrat in the group, the conversation didn't exactly lag.

After a while, Ed Wilkinson came along, and the talk drifted somehow from politics to horseshoe pitching. Ed and Frank were both pretty good at horseshoes, and finally Ed challenged Frank to a duel. And he offered to make a little wager on the best two out of three games.

Frank was all for the match, but the bet didn't suit him. "Tell you what," he said, "I won't bet with you, but I'm so sure I can win that if you beat me, I'll change my politics—I'll vote Republican from now on."

The first two games were a draw—one for Frank and one for Ed. The third game was very close



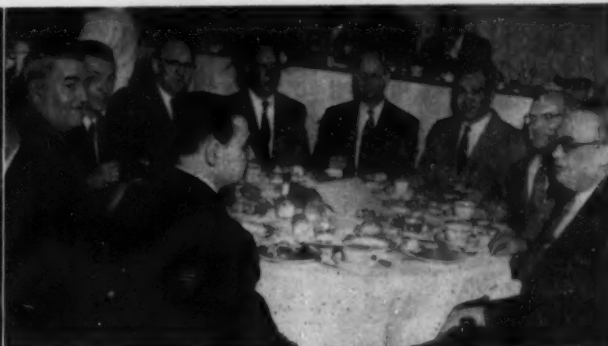
C. C. Virgin, Supt. Industrial Relations; C. O. Keck, Supt. Banning Mine; J. H. Reitz, Manager Mines; J. McVicker, Mining Eng.; W. Adamson, Supt., Clyde Mine; Fd Reed, Chief Eng.; C. E. Wiltsee, Supt., Crescent No. 2 Mine; L. C. Bush, Company Mine Inspector. All with the mining division of the Republic Steel Corp.



Left: Chas. F. Sargent, Outside Foreman; F. Pisula, Asst. Gen. Supt.; Geo. Sambrook, Director Mine Safety; A. R. Werft, Chief Engineer; W. J. Prosser, Master Mechanic; John H. Harris, Chief Mine Electrician. All with the mining Dept. U. S. Steel Corp.



Left: C. W. Connor, Jr., Asst. Supt., U. S. Steel Corp.; Charles W. Connor, Sr., Consultant, Dept. of Interior, Washington, D. C.; W. F. Shiffbauer, Chief Electrician, Buckeye Coal Co.; G. C. Higinbotham, Crucible Steel Co.; John L. Hankins, Fayette Fuel Co.; Clarence Smith, Supt., U. S. Steel Corp.



Charles Georgi, Teller, Masontown Natl. Bank; M. F. Scully, Gen. Asst., Vesta No. 5 Mine, J. and L. Steel Corp.; P. J. Finan, Mine Foreman, Vesta No. 5 Mine; W. P. Kuhns, Supt., U. S. Steel Corp.; Paul Becker, Mine Safety Appliances Co.; W. Barkell, U. S. Steel Corp.; Merlyn F. Condit, Mine Safety Appliances Co.; K. W. Bartlett, Div. Supt., Bethlehem Mines Corp.; Wm. Stevenson, Gen. Mgr. Mines, Hillman Coal and Coke Co.

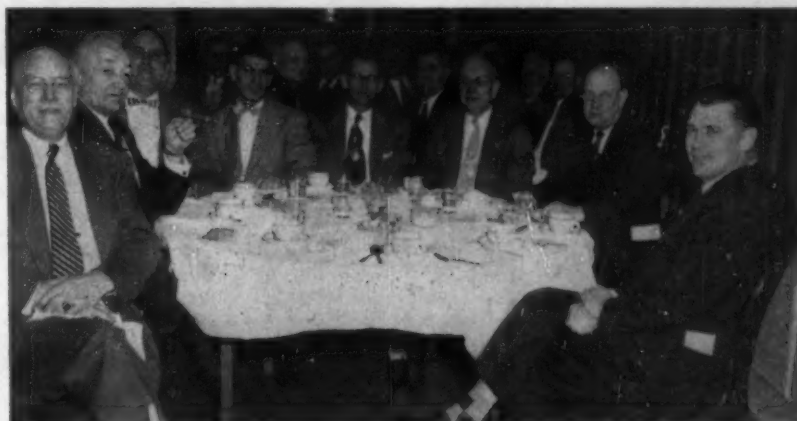
and it finally progressed to a point where the score was Kane 18, Wilkinson 15, with two throws left for each man.

Kan's first throw was a ringer. His second was a rider. That made a possible five points.

Then Ed came up. His first throw was a ringer—and it knocked off Frank's rider. Then he threw the second shoe. It was another ringer.

Final score: Wilkinson 21, Kane 18. And, true to his word, Frank Kane was a Republican from that day on.

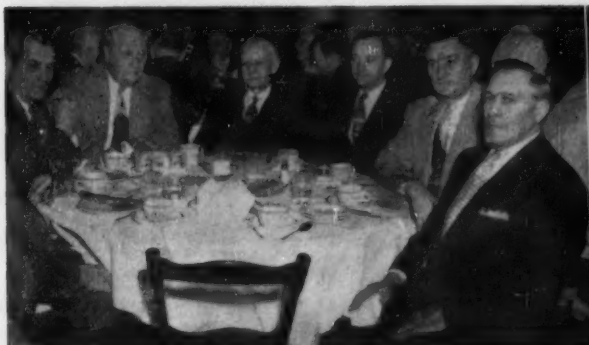
Of course, Ed didn't always win. He worked hard, and studied hard to pass the tests to qualify himself for promotions. But somehow things didn't always work out just as well as they might have. Back in 1907, for instance, when he was still working for Bessemer, Ed got married and got a promotion just about the same time—a promotion to Night Fire Boss! But, in time, such difficulties were overcome.



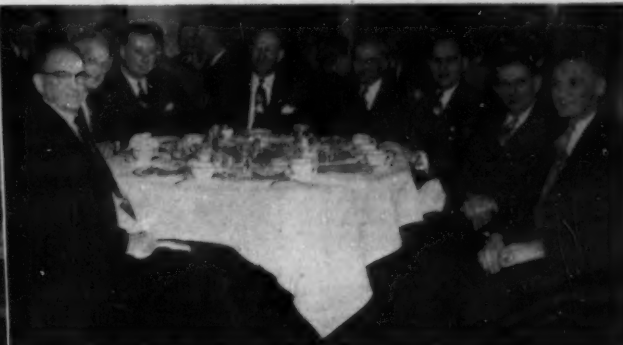
Left: Wm. Connor, Mine Foreman; Chas. Goodman, Cerafino Casani, W. Nichols, Asst. Foremen; Walter F. Siednisky, Mine Foreman; E. P. Skiles, Gen. Mine Foreman; Alex Grant, Gen. Mgr.; Michael Szabo, Asst. Foreman; John R. Murphy. All with the Mining Dept., Buckeye Coal Co.

Ed has been a familiar and well-liked figure around the mines for many years, but he has found time for a number of outside activities, too. He has been prominent in

various safety, mine inspection, and coal industry organizations. He has been active in fraternal and church affairs. And, back in his younger days, Ed was well known



In this group are R. J. Hunter, Mine Foreman; Wm. Morris, Safety Dir., Baton Coal Co.; Clinton Hock, Dept. of Mines; and Harry M. Mathias, Supt. Carpentertown Mine, Baton Coal Co.



Harry L. Mullen, retired Mine Foreman, U. S. Steel Corp.; Martin Murphy, Martin Lally, both Asst. Mine Foremen, Robena Mine, U. S. Steel; Joseph C. Hickler, Master Mech., Palmer Mine, U. S. Steel; Luther Miller, Walter Regalinsky, both Asst. Foremen, Leisenring No. 2 Mine, U. S. Steel Corp.; Mike Burncheek, Asst. Foreman, Leisenring No. 3 Mine, U. S. Steel Corp.



around here as a professional baseball player.

From 1901 to 1904, he pitched in the Pennsylvania, Ohio and Maryland League. Later, he tried out with the Philadelphia Athletics, at the same time as Chief Bender. Ed's first association with Frick Coke was not in connection with the mines, but as a pitcher for the Ed-eborn baseball team. That was about 1906 or 1907, and some of the old-timers remember his playing very well.

"Ed was never a spectacular player," one of them said recently, "Never anything fancy. But he was good. He never put on any dramatics or fireworks. He just went out there and pitched. And when the game was over, he went home."

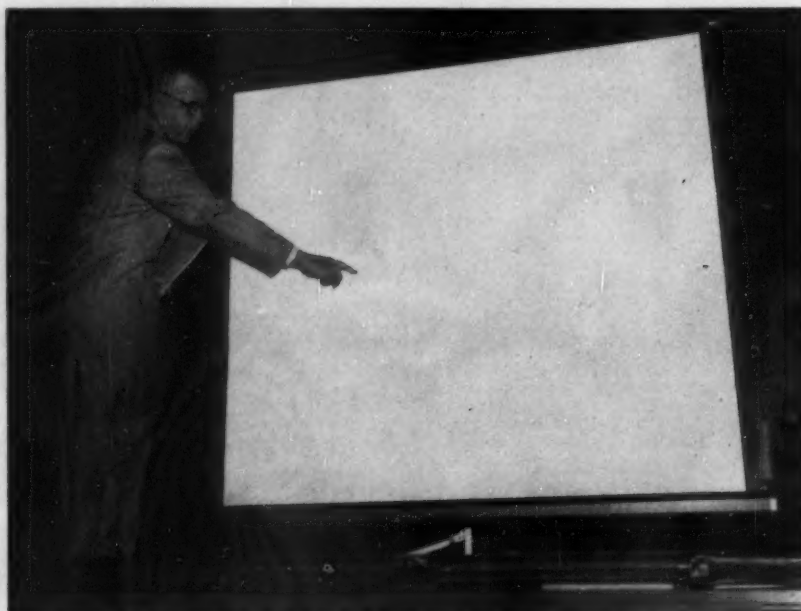
And it seems to me that that's one of the best descriptions I've heard of the way Ed Wilkinson has always done everything. "No fireworks and no dramatics. He just went out there and pitched."

People who do that are rare in this world. Most of us, sooner or later, play to the grandstand, if only occasionally—or we start baiting the umpire—or playing a one-man game. But Ed Wilkinson has never done any of these things. He's always considered himself as just one more man on the team and "gone out there and pitched."

As I said before, Ed, we're going to miss having you around the mines from now on, but we're glad you've been around this long. For I say sincerely—for myself and in behalf of all the others who have worked with you—that the bituminous coal industry in general and the Frick District in particular are better organizations for having had a man of your ability, integrity and loyalty associated with them during these past sixty years.

Safety in the coal mines is a matter of the utmost concern to all of us. Our properties are at present being inspected by experts from every conceivable type of organization, both governmental and private. We are surrounded by laws, rules and regulations, and we equip our mines with expensive and elaborate safety devices. But, in the last analysis, Safety is a personal matter with each employee and supervisor, and unless we add to the mechanical safety structure that certain "something" exemplified by the character and personality of our honored guest, we just cannot have real safety.

My hat's off to you, Ed!



Herb Steinman, Chief Eng., Jones and Laughlin Steel Corp., explaining the workings of the stacker from tracing projected on screen. Mr. Steinman read Mr. John Riley's paper.

## STACKING

(Continued from Page 12)

equals eight cents per ton of material handled. If the need for the two long stationary conveyors and the necessity of a dump conveyor were eliminated, a considerable cost reduction could be realized.

The initial cost of the equipment was \$1,800,000.00.

The maximum depth and angle of repose of any pile will, of course, be influenced by the character of the particular material being stored. It has been our experience that about 80 feet of depth in one pass is the maximum—any depth in excess of 80 feet has caused slides that endangered the boom conveyor. We also have learned that when storing the material on a down grade of natural terrain that benching is necessary to protect the equipment from slides. How much benching would be necessary in extreme conditions we do not know, as our disposal site is relatively level, but I would say that a stacking application would be limited to suitable natural terrain conditions.

To date, this system has been in operation approximately three and one-half years and we have handled approximately six and one-half million tons of refuse. We have had no major breakdowns, but on several occasions have been forced to operate, temporarily, by trucking the refuse from the silos

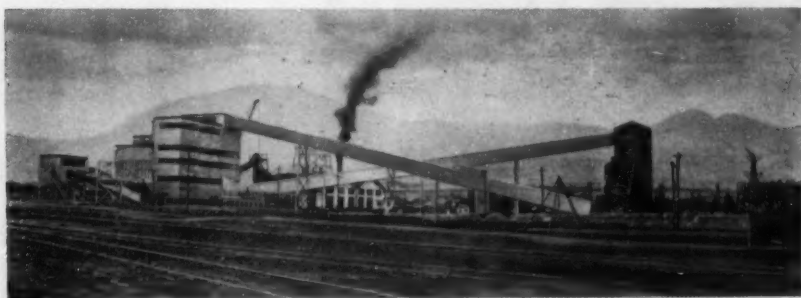
to an emergency dumping site near the plant entrance. It is on these occasions that the stacking system is fully appreciated. Trucking cost, on a permanent basis, would be prohibitive handling the high tonnage rates necessary at our plant.

Our experience has proved to us that the stacking method is by far the most efficient and economical means of refuse disposal for high tonnage rates.

- A shear type tool for cutting soft copper and aluminum cables, insulated or otherwise, sizes up to 1 3/8" O.D. has been announced by H. K. Porter, Inc., of Somerville, Mass. The manufacturer states that it has the true shear action of two sharp curved passing jaws so that the cut does not flatten or crush the cable ends but still cuts cleanly. It is for soft, non-steel metals only and is not suitable for ACSR Cable. Detailed information available from manufacturer.

- Construction will begin soon of a new machine shop, precision shop and material control office for the Research Department of Caterpillar Tractor Co.

The new building will provide about 26,000 square feet of floor space and will be connected to the present Research Building by a 30-foot sheltered passageway. Work is scheduled to begin in March. The building is expected to be ready for occupancy next fall.



After a period of 80 years in developing a lignite deposit in Turkey, a new and ultra-modern coal preparation plant, located at Soma, has just started operating under the management of Eti Bank of Ankara. The industrialization of Turkey has led to an increased demand for fuel of a high degree of perfection. The demand for coking coal for metallurgical purposes has added impetus to the building of a plant that would supply coals for industry, as well as metallurgical coal. The new washery was designed, equipped, and erected by McNally Pittsburgh Mfg. Corp., Pittsburgh, Kansas. The fully automatic washing equipment con-

sists of coarse coal and fine coal washers of the McNally Norton Baum Jig type.

The coal is dried in two McNally Carpenter Centrifugal Dryers to a surface moisture of not exceeding 4%. The new washery is equipped to produce 165 short tons of coal per hour.

The plant was designed by the engineering department and manufactured by the shops of McNally Pittsburgh in Pittsburgh, Kansas. Into the plant were incorporated the latest American developments in coal preparation technique so that the Turkish property at Soma is now equipped to prepare the Soma lignite for Turkish and export use.



● Publication of a new 2-color, 4-page catalog, descriptive of Austin Overshot Loader Models 4-C and 6-C, is announced by Austin Division, Central Ohio Steel Products Co., Galion, Ohio.

The new folder is profusely illustrated with action photos and line sketches. Mechanical features and operating principles are discussed with special emphasis on the exclusive Austin "straight-in-line" loading method. Full specifica-

tions are included.

Models 4-C and 6-C are engineered for use with Caterpillar D4 and D6 Tractors, respectively. 4-C has a  $1\frac{1}{3}$  cu. yd. bucket capacity and the 6-C, 2 cu. yds. Both models are hydraulically operated.

Catalog copies are available at all Caterpillar dealers or upon request of Austin Division, Central Ohio Steel Products Co., Galion, Ohio.

Model 4-C Austin Loader mounted on Caterpillar D4.

● A new  $8\frac{1}{2}$ -ton capacity dump body hoist is announced by The Galion Allsteel Body Company, Galion, Ohio.

Known as Allsteel Model 740, the new unit weighs 1,025 lbs. Capacity is rated on the basis of a 10 ft., 4-yard dump body.



Model 740 features include an all-steel subframe with underbody double lift arms. Piston rod diameter is  $2\frac{1}{2}$  inches and stroke is  $19\frac{1}{8}$  inches. There are 4.3 gals. of oil in the hydraulic system and piston stroke oil displacement is 765 cubic inches. Cylinder diameter is 7.156 inches. Mounting height is 14 inches and hoist has a 50 degree dump angle.

The hoist is equipped with a heavy duty pump which can be applied in either vertical or horizontal position.

#### Pittsburgh Coal Mining Institute Meets at California, Pennsylvania (Continued from Page 16)

and then wedge. All this time the machine would be standing idle. And where would the timber be placed? At the face? No! It would have to be back far enough to allow the machine to maneuver. Not being able to cut hitches and thereby being compelled to use legs again, the operator loses time and tonnage avoiding the legs as well as having the hazards of possibly knocking them out and having the roof collapse.

In conclusion, I would like to point out again that although roof bolting is neither a cure-all nor an omnipotent weapon against all roof troubles, the rougher the roof condition, generally speaking, the more economy and safety will be derived from roof bolting.



Osgood Model 1006 shovel stripping the Redstone seam.

## Old Mine Fire Starts Successful Stripping Operation



Caterpillar D-8 Tractor pushing overburden spoiled by the Stripping shovel on the Redstone seam.



Agricat tractor cleaning the surface of stripped Pittsburgh seam coal.

The Aken Industries, Inc., of Pittsburgh, Pa. is stripping a 210 acre tract of Pittsburgh seam coal lying to the left of new Route 51 at Large, Pa., about 12 miles South of Pittsburgh and another 20 acre tract of Redstone seam coal on old Route 51. This operation was started principally to extinguish the old mine fire that has been burning for many years on Route 51 just above the town of Elizabeth. This tract of land also has in it about 175 acres of the solid Redstone coal.

The Pittsburgh seam in the 210 acre tract has been deep mined but from 2 to 3 strip shovel cuts of solid coal have been left near the outcrop. The Pittsburgh seam coal on this tract will take about 2 years to recover on the basis of the present market. The Reddog in the burned area find a ready market and will bring in additional revenue.

A small Agricat tractor is used to clean the surface of stripped coal, which because of its size, does not only a better job of cleaning but also saves coal.

The stripping shovel is also used to load out coal. Since the coal is sold on a BTU basis, crop coal is stored in a pile then blended with the coal lying under deeper cover. The coal in the pile is loaded into the trucks by a Lessman loader.



Overburden on the Redstone seam consists of a hard soapstone, interspersed with limerock, and loam. This overburden is drilled for shooting with a McCarthy earth drill.

Stripping is done with an Os-good Model 906 shovel, assisted by a Caterpillar D-8 tractor. Present cuts run about 35 feet. Top overburden runs up to 55 feet and scrapers will be used to move the top 18 feet of cover in the high area.

The Redstone coal runs from 45 to 48 inches thick in this area and, lying under good hard rock it is at its best. The output from both these pits goes mostly to the new Elrama Power Plant of the Duquesne Light Company.

● The Mathematical Computing Service, Consultants in Applied Mathematics, 105 Court St., Brooklyn 2, N. Y. is offering a Mathematical Computing Service that specializes in performing services for industries desiring engineering calculations, charts and nomographs of a high degree of complexity and the treatment of related mathematical problems in the field of mining engineering. An important function of our group is the mathematical formulation and complete solution of a problem from given physical data. The staff consists of consultants holding Doctorate Degrees who are qualified to treat problems in applied mathematics related to the physical sciences.



Lorain Model 75-B loading out the Pittsburgh seam coal. This shovel also strips the Pittsburgh seam.



Caterpillar D-8 tractor backfilling on the Pittsburgh seam.



Lessman loader loading out coal from storage pile.



General Foreman James A. Malor (second from left), Lillybrook Coal Company's Affinity Slope Mine at Affinity, Raleigh County, W. Va., accepts U. S. Bureau of Mines certificate award for 100 percent training of mine officials and keymen in accident prevention. The course was conducted by Lloyd G. Fitzgerald (center), Mining Engineer, U. S. Bureau of Mines, Mount Hope, W. Va. Others in the picture are Walter Beene, Safety Inspector; V. M. Calvert, General Night Foreman; and Howard Cole, Section Foreman.



This 18 cubic yard, 4-wheel drive, twin power scraper was recently placed on the market by the Euclid Division of the General Motors Corp.

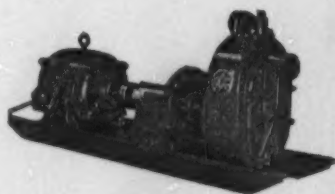
● Broderick and Bascom Wire Rope Co., St. Louis, Missouri, manufacturer of Yellow Strand Wire Rope, has devised a new service plan for wire rope users. Appropriately named the Yellow Strand Speedi-Service Plan, the unique program will be administered by more than 400 Broderick and Bascom distributors.

The core of the Speedi-Service Plan is a record file of equipment users' wire rope needs. These needs are determined by a survey taken by distributor salesmen or by facts supplied by the user himself. The facts obtained are transferred from the survey form onto permanent record cards, one for each piece of equipment. At the time of transfer, distributor stocks are checked and any ropes that may be needed in the future are ordered for stock. The equipment records are kept up to date by distributor personnel.

When a rope requires replacement, the user just phones his Broderick and Bascom distributor, telling him what machine needs the rope and what rope it is. The distributor's rope men consult the handy record file and can tell in an instant the exact length, size, construction, grade, and lay of rope needed.

The wire rope order is filled from stocks maintained for the user's needs and is ready for delivery in minutes. This saves considerable time for the equipment owner, eliminating the time-consuming search for rope data and much record keeping.

The Yellow Strand Speedi-Service Plan is now offered by all Broderick and Bascom distributors. Survey forms can be obtained from them or by writing the Broderick and Bascom Rope Co. in St. Louis.



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● The top 348 industrial organizations in the United States and Canada for the year 1953 were named by the American Institute of Management in its *Manual of Excellent Managements*. The *Manual*, and the listed companies, are the result of the year's study of some 4,000 businesses through the United States and Canada according to the Institute's Comparative Management Audit methods.

The *Manual* lists all 248 excellently managed companies in four basic lists, broken down alphabetically for ease of reference, by industry, geographically, and by the Institute's rating within the 348 companies themselves. There are also supplementary lists showing the companies with the greatest growth potential, the best records of stability of net income, and the most outstanding outside boards of directors. A final listing shows the uninterrupted cash dividend records of all 348 companies.

In addition, the *Manual* briefly discusses the Management Audit methods of the Institute, and analyzes the scope of the method and the reasons behind the entire operation of management auditing as it has been developed by AIM.

A special feature of the book is a full-scale public Management Audit of The National Cash Register Company, one of the top twelve companies in the country in 1953. National Cash achieved a 9,400 point rating out of a possible 10,000 on the Institute's scale. The Audit is presented "because National Cash is one of the best of all companies, as an example of the methods by which the Excellently Managed Lists are formed, and as a significant contribution to a better understanding of management methods in general," according to Jackson Martindell, president of the Institute.

Purpose of the *Manual*, Mr. Martindell explained, is to enable everyone concerned with management appraisal and improvement to compare the management records of various companies, industries and areas, so that a more accurate judgment of a company's performance in management can

be made, relative to the listed companies.

Copies of the *Manual*, a 96 page book, are being distributed to the Institute's 12,000 members in top management, and are available to

anyone interested. Copies can be obtained from:

The American Institute of Management  
125 East 38th Street  
New York 16, New York

● A new 150-horsepower four-wheel tractor has been announced by Caterpillar Tractor Co., Peoria, Ill., in conjunction with the fiftieth anniversary of the crawler tractor, pioneered by Caterpillar.

The new tractor, the DW15, is powered by a Cat six cylinder D326 Diesel Engine, producing 150 hp at 1800 rpm with 5 $\frac{1}{8}$ " x 6" bore and stroke. The engine features aluminum alloy pistons with cast in iron band backing for the top compression ring. Chrome-nickel steel heat plugs incorporated into the pistons give longer life. A triple duty oil pump provides positive lubrication on steep grades. Oil can be picked up from the front or rear of the oil pan or from the main oil sump located near the center of the tractor.

Standard transmission, gives double speed ranges, with 10 forward speeds up to 24 miles per hour and two reverse speeds up to 3.3 mph. Optional final drive gears make possible speeds up to 31.3 mph.

Large capacity wheel brakes are foot pedal controlled and have compressed air boosters. When brakes are applied, those in the pulled unit are actuated automatically just before the prime mover brakes take

hold. This insures anti-jackknife protection.

The flywheel clutch has an air booster which reduces clutch pedal pressure when engaging and disengaging the dual, 16-inch metallic clutch plates.

A comfortable foam rubber seat has an adjustable snubber arrangement which minimizes rebounds and gives greater comfort to the operator.

A large 75-gallon fuel tank contains enough fuel for a full day of operation.

Wheelbase dimension on the DW-15 is 121 $\frac{1}{2}$  inches. Front tire sizes are 12.00 x 20, 14 ply traction type. Rear tire are 21.00 x 25, 20-ply rock type. Overall length of the new tractor is 16 feet 8 inches.

Improved hitch construction facilitates quick, easy removal of hitch. Front bumper and pull hooks are included as are two headlights on the front and rear bumpers.

The tractor features a gasoline starting engine with a 6 volt electric starter.

The new tractor, designed for principal use with the Cat No. 15 Scraper, No. 10 Scraper and W10 Wagon, includes wagon controls and window breaker.





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## SCHROEDER MODEL 12-B COAL DRILL



*Light-Weight!  
Hydraulic!*

The Model 12-B Coal Drill gives you safe, dependable fast drilling with complete operational safety . . . no spark, no kick . . . all electrical hazards are removed yards from the drill. Powered from the hydraulic power systems of standard mining equipment, the Model 12-B is simple in design. It has a minimum of operating parts resulting in greatly reduced maintenance costs.

Write or call for details and demonstration.

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Waukesha Diesel Engine  
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Phone: LEhigh 1-6020

Belknap Coal Washer, 140 TPH. Sizes ½ x 4. Good as new.

Lima 802, High Front Shovel, 1½ yd., Boom 34, stick 22. Excellent condition.

Jeffrey New 8 ft. HU Aerodyne Mine Fan complete with 175 HP motor control, v-belt dr., 10.5 water gauge. Price open.

GE 500-KW Syn. Converter, 600-V with Trans.

GE 300 KW Mg. set, 250-V Fully Automatic.

McNalley 75 TPH Coal Washer—sizes ½ to 4" —Plant complete with all conveyors—shaker dewatering screens, electrical equip.

Northwest 80 D 2 yd. shovel.

Northwest Model 6—1½ yd. shovel.

Caterpillar D8 Dozer and D7 Dozer.

Air Compressor Gardner Denver 315 CFM.

Joy 8 BU Loaders—5 price right.

Joy MTB 30" Belt Conveyor—40 HP.—Permissible.

Joy 11 BU Loader 250 V DC—A-1 machine.

Joy 14 BU Loaders—very good machine.

Joy E Loading Heads—PL 8 PE 250 V. DC.

Slope Hoist 400 HP. with GE Controller.

Shaft Hoist 700 HP. complete controls.

W. H. 8 ton 500 V 36" go permissible loco.

Ohio Brass 15 HP. Automatic starters 600 V.

Jeffrey Permissible Distribution Box 550 V.

Jeffrey 56 A Track Type Drills.

CD-4 Track Type Coal Drills. Bargain.

Goodman—512 Shortwall Cutters. Permissible.

Bugdusters and Joy Cat. trucks A-1.

Champion Light Conveyor—42" x 8'

4 Large Steel Bins 70 T and 140 Tons.

Myers Whaley track or Cat. type Loaders and track type converted to Caterpillar.

Wanted—Hydraulic Track Type Drills or on rubber, 550 CP Preferred.

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● An excellent stock of quality used machinery—most having been taken in trade on new Caterpillar machines. All guaranteed to be exactly as listed—your assurance of the best in used equipment.

ITEM WV102 — Caterpillar Model D7 Tractor mounted with LeTourneau Model A7 Straight tiltdozer and Caterpillar 9R series cable control unit, equipped with crankcase guard, heavy duty track roller guards and canopy top. Engine on this machine has been completely rebuilt including NEW crankshaft. The master clutch and steering clutches checked and adjusted. The tracks on this unit are like new and entire unit has been cleaned and painted. The unit is in excellent condition. F.O.B. Clarksburg, W. Va. — Price \$7,500.00

ITEM WV105 — Caterpillar Model D8 Tractor mounted with Caterpillar Model 8S Bulldozer and LeTourneau double drum cable control, equipped with crankcase guard, front pull hook and canopy top. Installed new pistons, rings and complete valve job on starting engine. Installed new pins in master clutch, adjusted steering clutches and entire unit has been cleaned and painted. This unit is in good condition. F.O.B. Clarksburg, W. Va. — Price \$7,500.00

ITEM WV109 — Caterpillar Model D4-40" Tractor mounted with Caterpillar 4A Bulldozer and No. 44 Hydraulic control, equipped with Crankcase guard, front pull hook and 16" grouser tracks. Installed new drive pinion flange and dog house seals. Installed new bellows seal left side and the entire unit has been cleaned and painted. This unit is in excellent condition. (1950 model). F.O.B. Clarksburg, W. Va. — Price \$5,300.00

ITEM C118 — Allis-Chalmers HD14C, with Baker hydraulic straight blade. Needs some engine repairs but track, rollers and appearance good, equipped with crankcase guard, front pull hook and sprocket guard. F.O.B. Clearfield, Pa. — Price \$2,700.00

ITEM WV104 — International Model TD6 Diesel Tractor mounted with Bucyrus-Erie Hyd. Angledozer. Equipped with crankcase guard, front pull hook, bottom roller guards and electric starter. This entire unit has been cleaned and painted and is in excellent condition. F.O.B. Clarksburg, W. Va. — Price \$3,750.00

ITEM C127 — Caterpillar D17000 engine, New change-over roup installed. Single water pump. Like new — rebuilt and guaranteed. F.O.B. Clearfield, Pa. — Price \$6,500.00

ITEM B103 — HP 326 Buda Engine equipped with electric starting roup. Twin Disc Clutch, Belt pulley, mounting base, ready to install in spudder, also has new radiator core. This machine was overhauled in our shop and included new crankshaft, main bearings, connecting rod bearings, pistons, rings and valves. F.O.B. Bradford, Pa. — Price \$1,040.00

ITEM P108 — Chicago-Pneumatic, Model 70 Drifter, F.O.B. Pittsburgh, Pa. — Price \$250.00

ITEM B104 — D4-60" Caterpillar Tractor, equipped with R61-1745 LePlant-Choute Trail-builder blade, track roller guards, radiator guard, sprocket guards, tracks, track rollers, and carrier rollers, in very good condition. This tractor was completely gone over in our shop. Appearance very good. F.O.B. Bradford, Pa. — Price \$8,390.00

ITEM C133 — Caterpillar No. 212 Motor Grader, with cab and small front tires. Heater, new seats, new glass. Good running condition. Repainted and decaled. F.O.B. Clearfield, Pa. — Price \$3,500.00

ITEM E120 Gallon Model 101 Tandem drive grader, with scarifier, 12' blade L.H.C. Engine, large tires all around, Steam cleaned and painted. F.O.B. Erie, Pa. — Price \$3,900.00

● All items subject to prior sale. All may be inspected at location shown. Pictures and additional information furnished on request . . . write, wire, phone your needs today!

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GENERAL, 1 Yard — Type 42  
13 Ft. Crawlers, 30" Shoes, Air Swing  
Caterpillar Diesel D318 Engine  
Excellent Condition

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1-75 KVA1220-440-V Caterpillar Diesel, Gen. Set.

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Office & Warehouse • 310 Mendota St. • Pittsburgh 12, Pa. • CEDAR 1-7710

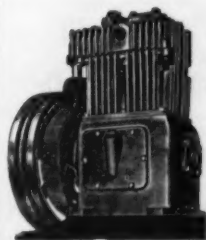
## MOVERS OF COAL STRIPPING AND CONTRACTOR'S EQUIPMENT



### HEAVY HAULING • RIGGING

## MOORE-FLESHER HAULING CO.

MOVERS of Coal Stripping and Contractor's Equipment  
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**MANUFACTURING COMPANY**

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## SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS

Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills

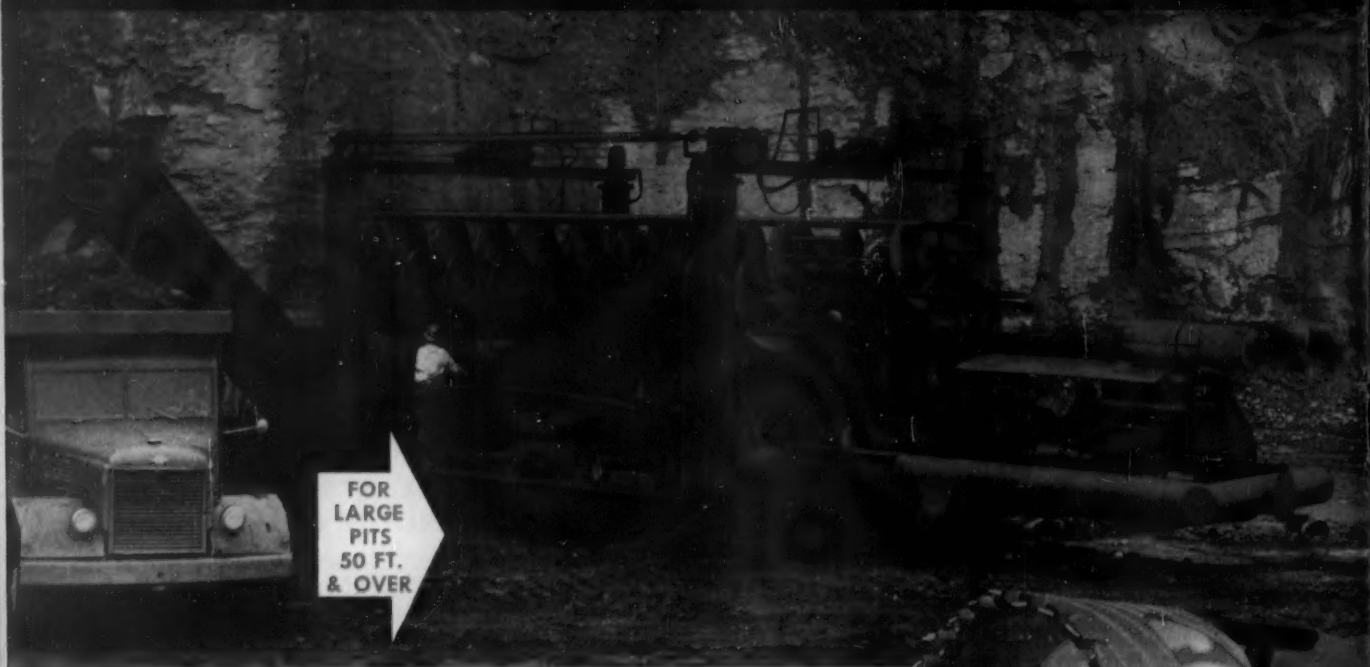


Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.

**THE SALEM TOOL COMPANY**

SALEM, OHIO, U.S.A.

# COMPTON Model 48 Coal Auger



**Recovers coal up to  
208 ft. from the pit wall**  
*... regardless of overburden*

The Compton Model 48 Coal Auger is designed to give you maximum efficiency at low cost. CHECK THESE FEATURES!

- 1.—Auger sections racked on frame—ready for transfer to operating position by hydraulically controlled synchronized winches in a matter of seconds.
- 2.—Hydraulically-operated pilot pan eliminates spillage between machine and high wall.
- 3.—Entire unit is self-contained including elevating conveyor.
- 4.—Hydraulically-controlled swivelling discharge turret chute permits uniform trimming of trucks.
- 5.—Hydraulic jack legs (with self-leveling pontoons for better floatation) permit drilling up to 208 feet without misalignment ... also permits drilling vertical overlapping holes for varying seam thickness.

## COMPTON CUTTING HEAD

EXCLUSIVE WITH COMPTON AUGERS...  
BUILT-IN SPIDER ASSEMBLY ON NON-CLOG-  
GING HEAD RESULTS IN INCREASED PRO-  
DUCTION BY DRILLING STRAIGHTER HOLES  
WITH LESS FRICTIONAL DRAG.

## MODEL 48 SPECIFICATIONS

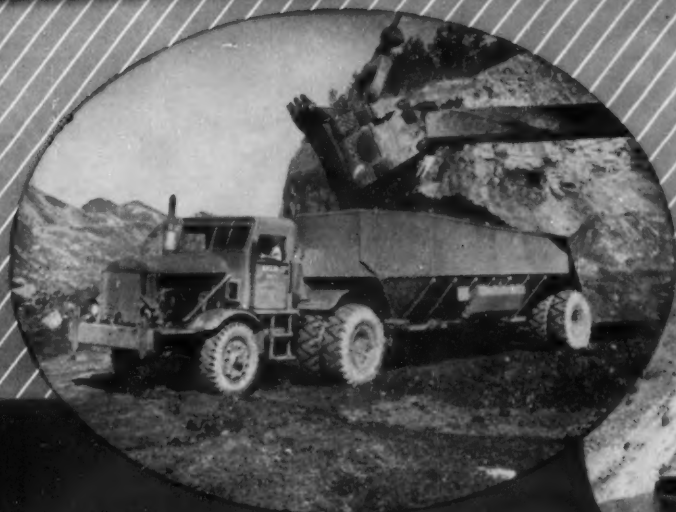
Length: 48 feet; Weight: Approx. 36 T.  
Carries eight 26 foot auger sections.  
Required pitwidth: 50 feet  
Power: 300 HP Diesel Engine  
Hydraulic frame jack lift: 66" or 120"  
Auger diameters: 28" to 46"  
Possible drilling depth: 208 feet

Consult a Compton Engineer for Details

***Compton, Inc.***  
ORIGINALITY OF COMPTON 1947 RECOVERS HEAD

BOX 1946 - PHONE 4-6384 CLARKSBURG, WEST VIRGINIA





# In Mines and Quarries "EUCS"

**HAUL MORE TONS  
AT LESS COST**



Built for tough off-the-highway hauling, Rear-Dump and Bottom-Dump "Eucs" have stepped up production and cut hauling costs on hundreds of open pit mining and quarry operations.

Euclids have proved their efficiency and long life in hauling a wide variety of materials... coal, ore, rock, overburden and other heavy excavation. Bottom-Dumps are powered by diesel engines of 190 to 300 h.p. ... loaded speeds up to 34.4 m.p.h. ... available in 20 to 40-ton capacities. Rear-Dump "Eucs" have travel speeds up to 36.3 m.p.h. ... powered by diesel engines of 125 to 400 h.p. ... range in capacity from 10 to 34 tons.

Your Euclid Distributor has performance data on jobs similar to yours. Ask him for a Euclid hauling cost estimate — there's no cost or obligation.

**EUCLID DIVISION** • GENERAL MOTORS CORPORATION • CLEVELAND 17, OHIO



## **Euclid Equipment**

FOR MOVING EARTH, ROCK, COAL AND ORE



# Look

to your

Highway representative

for help in selecting the

mining equipment best

suited for your job. These

factory-trained specialists

will be glad to give you the

benefit of the experience

gained in helping to solve

the production problems of

many leading strip and

deep mine operators.

A-7089



Lima 2400 Shovel at TORONTO COAL CO.,  
Knoxville, Ohio



Allis-Chalmers HD-20 at C. H. GROVES & CO.,  
mine near Fairchance, Pa.

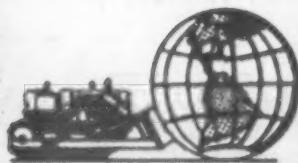


Jaeger Pumps solve water problems at WEIRTON  
CONSTRUCTION CO. operation, Weirton, W. Va.

*Highway*

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6465 Hamilton Ave. • Pittsburgh, Pa.



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